

**Part 1 General****1.1 SECTION INCLUDES**

- .1 Fluid applied membrane coating.

**1.2 RELATED SECTIONS**

- .1 Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate with broom finish.

**1.3 REFERENCES**

- .1 ASTM D412-06a(2013) - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
- .2 ASTM D903-98(2010) - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- .3 ASTM D1044-13 - Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
- .4 ASTM D1360-98(2011) - Standard Test Method for Fire Retardancy of Paints (Cabinet Method).
- .5 ASTM E84-13a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .6 ASTM E96/E96M-13 - Standard Test Methods for Water Vapor Transmission of Materials.
- .7 ULC-BM-14 - Building Materials Directory (2014 Edition).

**1.4 SUBMITTALS FOR REVIEW**

- .1 Product Data: Include product characteristics, limitations, and identify dissolving solvents, fuels, and potential destructive compounds.
- .2 Samples: Submit two (2) in size illustrating colour, surface texture, and variations.

**1.5 SUBMITTALS FOR INFORMATION**

- .1 Installation Data: Manufacturer's special installation requirements, including special environmental conditions required to install the Product and potential incompatibilities with adjacent materials.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: Include procedures for stain removal, repairing surface, and cleaning.

**1.7 MOCK-UP**

- .1 Provide 1 m long by 1 m wide field sample panel, with membrane system applied to representative substrate.
- .2 Approved mock-up may not remain as part of the Work.

**1.8 DELIVERY, STORAGE, AND PROTECTION**

- .1 Maintain ambient temperature of 13 degrees C
- .2 Keep away from fire or open flame.

**1.9 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Maintain this temperature range, twenty-four (24) hours before, during and seventy-two (72) hours after application.
  - .2 Restrict traffic from area where materials are being installed or are curing.

**Part 2 Products****2.1 MATERIALS**

- .1 Membrane: Fluid applied polyurethane waterproof; conforming to the following:
  - .1 Tensile Strength: ASTM D412,
  - .2 Moisture Vapour Permeability: ASTM E96/E96M,
  - .3 Fire Resistance: ASTM D1360, Weight loss not to exceed limit for non-combustibility.
  - .4 Surface Burning: ASTM E84,
  - .5 Bond Strength: ASTM D903, maximum.
  - .6 Abrasion Resistance: ASTM D1044
- .2 Filler and Primer: As recommended by membrane manufacturer.

**Part 3 Execution****3.1 EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Verify that substrate is ready to receive work, surface is clean, dry and free of substances which could affect bond.
- .3 Do not begin work until concrete substrate has cured twenty-eight (28) days, minimum, and measured moisture content is not greater than 16%.
- .4 Do not begin work until wood substrate has dried to a maximum moisture content of 12%.
- .5 Test concrete surfaces with litmus paper for acceptable level of alkalinity.

**3.2 PREPARATION**

- .1 Clean substrate surface free of foreign matter.
- .2 Patch wood substrate with latex filler to produce surface conducive to bond.
- .3 Patch concrete substrate with filler to produce surface conducive to bond.

## TRAFFIC COATINGS

.4 Install cant strips secure at intersecting surfaces.

.5 Protect adjacent surfaces.

**3.3 INSTALLATION**

.1 Install system materials to manufacturer's written instructions.

**3.4 PROTECTION OF FINISHED WORK**

.1 Do not permit traffic over unprotected surfaces.

**END OF SECTION**

**Part 1        General**

**1.1           RELATED REQUIREMENTS**

**1.2           REFERENCES**

- .1    ASTM International
  - .1    ASTM A506-12, Standard Specification for Alloy and Structural Alloy Steel, Sheet and Strip, Hot-Rolled and Cold-Rolled.
  - .2    ASTM B370-11e1, Standard Specification for Copper Sheet and Strip for Building Construction.
  - .3    ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .4    ASTM D2369-10e1, Standard Test Method for Volatile Content of Coatings.
  - .5    ASTM D2832-2011, Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
  - .6    ASTM D5116-10, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
- .2    Canada Green Building Council (CaGBC)
  - .1    LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum 2007).
  - .2    LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
  - .3    LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
  - .4    LEED Canada for Existing Buildings, Operations and Maintenance-2009, LEED Canada 2009 Leadership In Energy and Environmental Design Green Building Rating System Reference Guide.
- .3    CSA International
  - .1    CSA B111-1974(R2005), Wire Nails, Spikes and Staples.
- .4    Green Seal Environmental Standards (GS)
  - .1    GS-11-11, Standard for Paints and Coatings.
  - .2    GS-36-11, Standard for Adhesives for Commercial Use.

**1.3           ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Product Data:
  - .1    Submit manufacturer's instructions, printed product literature and data sheets for roof hatches and include product characteristics, performance criteria, physical size, finish and limitations.

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- .2 Submit 2 copies of WHMIS MSDS
    - .1 Indicate VOC's for caulking materials during application and curing.
  - .2 Shop Drawings:
    - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the province of Ontario.
      - .1 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.
  - .3 Manufacturer's Instructions:
    - .1 Submit manufacturer's installation instructions.

#### **1.4 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.5 CLOSEOUT SUBMITTALS**

- .1 Submit operation and maintenance data for hardware complete with pertinent details, spare parts lists and warnings against harmful maintenance materials and practices for incorporation into manual.

#### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect roof hatches from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

### **Part 2 Products**

#### **2.1 DESIGN REQUIREMENTS**

- .1 Roof hatches must withstand snow load of  $2.4 \text{ kN/m}^2$ , and wind uplift of  $0.75 \text{ kNm/m}^2$  without damage to unit or permanent deformation to seals.

#### **2.2 MATERIALS**

- .1 Steel sheet: regular quality alloy steel to ASTM A506.

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- .2 Galvanized steel sheet: commercial quality to ASTM A653/A653M, Z275 designation zinc coating.
  - .3 Aluminum sheet: mill finish plain utility sheet.
  - .4 Aluminum: extruded sections of AA6063-T5 alloy, all components one piece without splices.
  - .5 Copper sheet: to ASTM B370
  - .6 Gaskets: extruded resilient neoprene, with full recovery after 50% compression.
  - .7 Fasteners: nails to CSA B111
  - .8 Sealants:
    - .1 Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832
  - .9 Coating: in accordance with manufacturer's recommendations for surface conditions
  - .10 Primer paint for steel: to MPI #76.
  - .11 Isolation coating: alkali resistant bituminous paint or epoxy solution.

## **2.3 HATCH COVER**

- .1 Metal Cover:
  - .1 Preformed, galvanized steel.

## **2.4 ACCESSORIES**

- .1 Screws: galvanized steel for curb to structure.
- .2 Hinges: Recommended type by roof hatch manufacturer.
- .3 Latch: positive snap with turn handles inside and out and padlock hasps inside.
- .4 Securing latch: hold open operating arm with vinyl grip handle to permit one-handed release.
- .5 Resilient gasket/seal to inner face of lid in contact with hatch lid support frame.

## **2.5 FABRICATION**

- .1 Fabricate components free of twists, bends, or visual distortion and insulated. Weld corners and joints.
- .2 Assemble roof hatch components as indicated.
- .3 Ensure continuity of weather-tight seal.
- .4 Design flashings to collect and lead off accumulated condensation.
- .5 Zinc plate hardware and attachments and shop prime ready for field painting.

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**Part 3            Execution**

**3.1                EXAMINATION**

- .1      Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for roof hatch installation in accordance with manufacturer's written instructions.
  - .1      Visually inspect substrate in presence of Departmental Representative
  - .2      Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3      Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2                MANUFACTURER'S INSTRUCTIONS**

- .1      Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.3                INSTALLATION**

- .1      Erect components plumb, level and in proper alignment.
- .2      Ensure continuity of building envelope air barrier and vapour retarder systems.
- .3      Adjust and seal assembly with provision for expansion and contraction of components.
- .4      Secure prefabricated curb assembly to structure.
- .5      Coat aluminum and copper in contact with dissimilar materials, with isolation coating.
- .6      Secure and seal frame to curb.

**3.4                CLEANING**

- .1      Progress Cleaning:
  - .1      Leave Work area clean at end of each day.
- .2      Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment
- .3      Waste Management:
  - .1      Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.5                PROTECTION**

- .1      Protect installed products and components from damage during construction.
- .2      Repair damage to adjacent materials caused by roof hatch installation.

**END OF SECTION**